



# Model NEO-10

## Version 1.0



# Technical Manual

November 26, 2003

PN: 803968

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# 1 Introduction

The NEO-10 device is a network based Input Output device. Within its enclosure are 10 DPDT relays with all 6 contacts of the relays brought out to ports (Normally Open, Normally Close, Common for each half of relay). There are also 10 diode blocked inputs which can be used to monitor external events. The NEO sends out multicast packet bursts anytime a relay or input changes allowing for all users of the device to see status updates in real time. Actual control of the NEO is accomplished by a TCP/IP socket connection from the controlling console. Version 2.52 of C-Soft supports control and monitoring functions to support multiple NEO devices on the network. Later releases of software for the desktop VoIP capable consoles will support NEO as well.

In addition to the I/O functions of the device, NEO supports 10 channels of echo packet functionality. Echo Packet is a method of copying voice/data content on the network from and to multicast addresses. This features allows the Vega multicast scheme to operate on a network without having multicast enabled. Until the release of NEO, only the Vega C-Soft product has this capability which relied on the stability of the Windows operating system. With the release of NEO this capability is now embedded in dedicated hardware and software in a more robust package.

## 2 Connecting NEO to the World

NEO has a total of three different ports that are used to connect it to the world. Likely, the first port that will need to be connected is the RS-232 port.

### 2.1 RS-232 Port

The RS-232 port is used for initial setup purposes only. It is a standard DCE pinout allowing a straight through DB9 cable to connect it to a computer or other terminal device for setup. Default baud rate is 19200,N81.

### 2.2 Ethernet Port

The Ethernet Port is used for setup of the NEO as well as for its operation from the consoles. Control of its relays is handled through this port. The NEO sends multicast packets whenever status of one of its relays or inputs changes allow for all users of the device to see real time changes in parallel. The port supports both 10 and 100 Mbps operation of standard Cat 5 cable.

### 2.3 Relay/Input Ports

There are 10 RJ45 ports that are used to sense inputs and control external events. Each connector is connected to a DPDT relay. Both sets of poles are brought out to the connector allowing for two separate circuits to be controlled by a single relay. Figure 1 shows the pin out of the rear RJ45s. "Relay1" designates the pins on one half of the DPDT relay and "Relay2" the other half. The relays are rated for 1 Amp at 125VAC. The GND signal is the signal ground of the device. The INPUT pin is a diode blocked input that allows sensing of a logic signal. The input range is 0-18 volts. Exceeding the limits of either the Input or the Relays is a violation of the warranty. The manuals of the various Vega VoIP consoles should be consulted for programming the user interface buttons to control the relays and sense the inputs of the NEO-10.

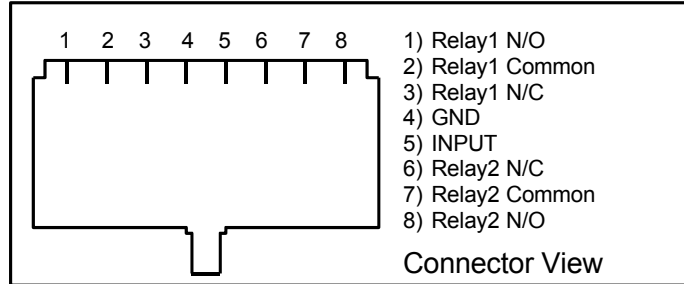


Figure 1-NEO RJ-45 Connector Pinout

### 3 Software Configuration of NEO

Setup of the NEO is almost entirely done using a web browser. The first step required during setup is to assign the IP and Mask addresses to the NEO, using either a WEB Browser or Hyper Terminal program if the assigned IP address is not accessible on your network.

#### 3.1 Setting the basic IP information with Hyperterminal

As was mentioned before, all other parameters are setup by using a browser such as Netscape or Internet Explorer. Before connecting to the adaptor with the browser, an IP address and Mask that is compatible with the users existing network must be set. See your network administrator to determine the proper values. **Once these values have been set, the unit must be reset for them to take affect.**

To change the IP and Mask addresses using a Hyper Terminal program follow these simple steps;

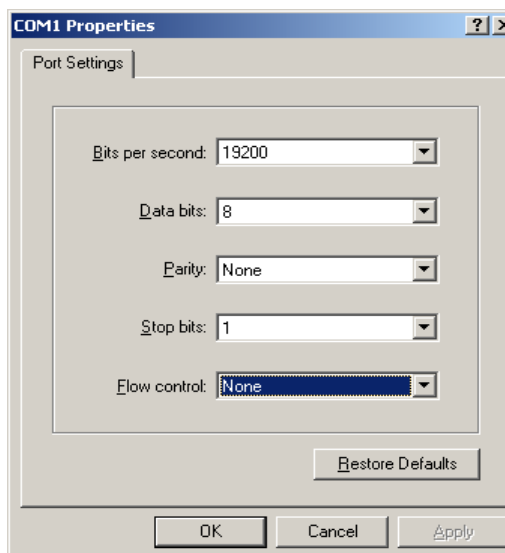
Connect the NEO serial port to your computer using a DB9 Serial cable.

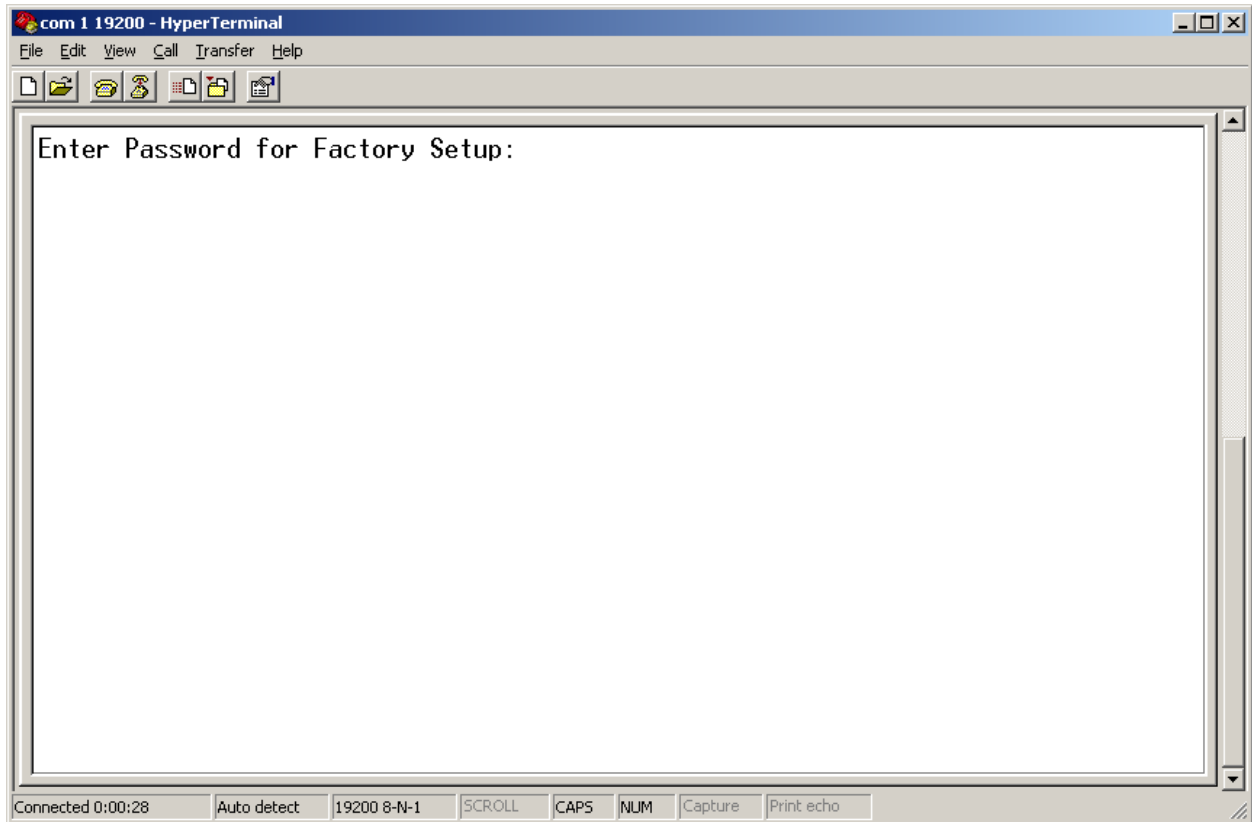
Load Hyper Terminal in your PC setting the name to COM.

Set Connect using COM1 or Serial port with cable attached.



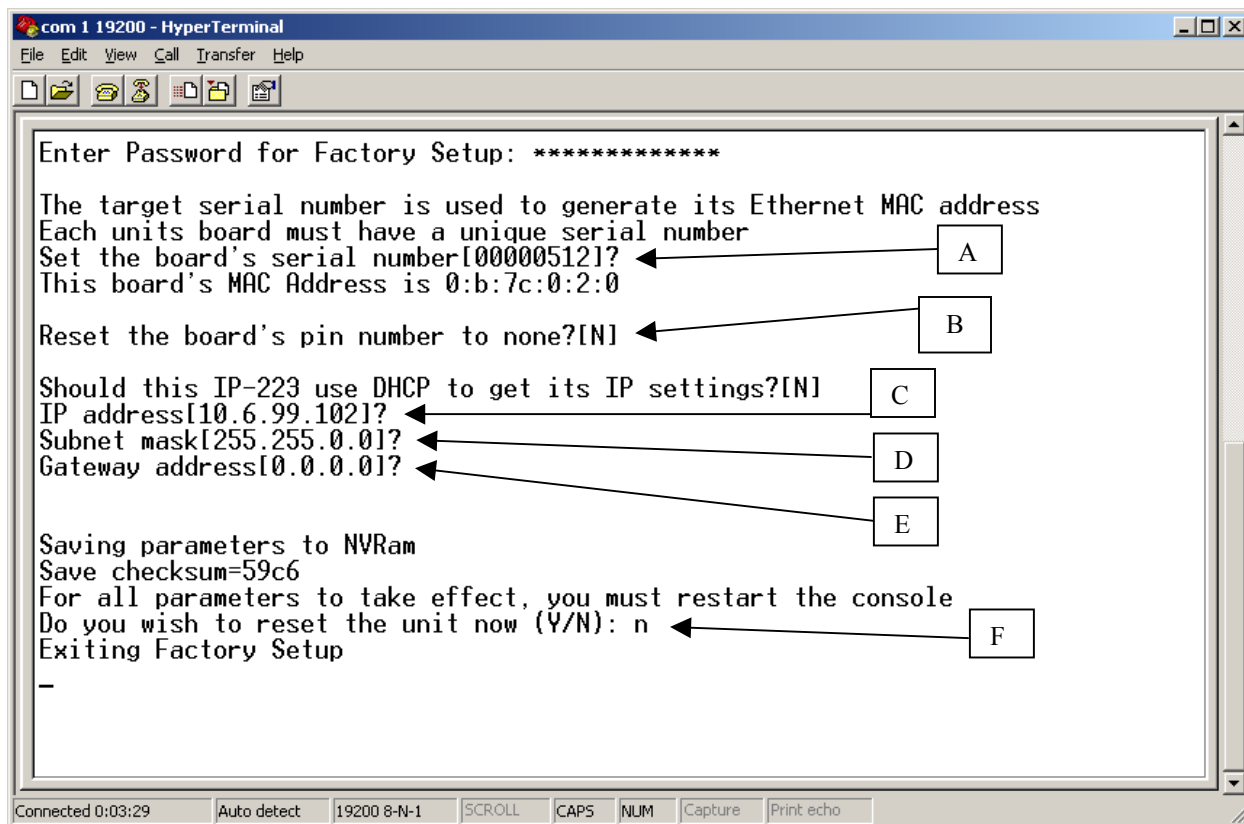
Set Baud to 19200 and Flow control to None.





At the main Hyper Terminal screen type uppercase S then <enter>.

Enter "technobabble" for the factory password.



A = The board serial number and case serial number should match.

B = Do you want to reset the PIN number programmed into NEO.

C = Current IP address, do you want to change?

D = Current Subnet Mask, do you want to change?

E = Current Gateway address, do you want to change?

F = Do you want to reset any of the above?

Once all parameters have been entered and saved, allow the unit to reset by answering Yes to the final question. The unit will reset in 10-20 seconds. Startup text will be sent to the serial port allowing verification of the setup parameters having been recorded correctly.

## 3.2 General Setup via Web Pages

The majority of the setup of the NEO is completed through the Ethernet port. Once the steps of 3.1 have been completed, a PC on the network can be used to gain access to the web page based setup of the NEO. In the URL window of Internet Explorer, type <http://X.X.X.X> where X.X.X.X is the IP address set in the previous section. An opening page will appear as shown in Figure 2. Clicking on the [Click to Enter] hyperlink will open the Basic Setup

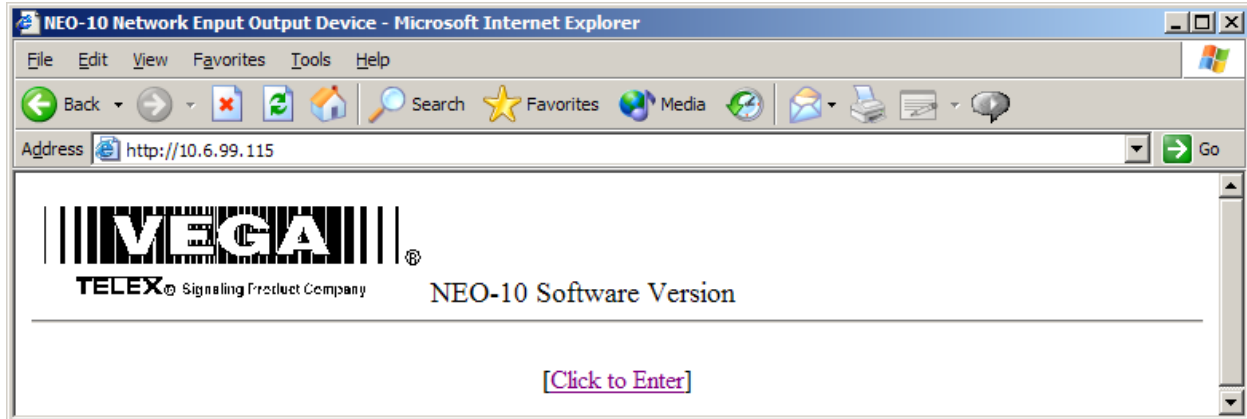


Figure 2-Opening Screen for web page setup

page shown in Figure 3.

## 3.3 Basic Ethernet Setup Screen

The parameters that can be set on the Basic Ethernet Setup Screen are as follows:

### 3.3.1 Use DHCP Server

This option, when checked will force the NEO to request a dynamic IP address when it is first turned on. Since it is important that the NEO always be located in a known location for all consoles utilizing it on the network, this should not be used as the normal operating mode. It is useful sometimes to determine the settings that might be used for a particular network or testing.

### 3.3.2 Unit IP Address

In addition to the method outlined in section 3.1, the base IP address can be changed from this screen.

### 3.3.3 Subnet Mask

Enter the subnet mask into this field. Obtain this information from your network administrator.

### 3.3.4 Gateway Address

The Gateway Address is the address to which packets are sent when the destination address of the packet is not on the same subnet as the NEO itself. Obtain this information from your network administrator.

### 3.3.5 DNS Addresses 1-3

Enter the DNS addresses provided by your network administrator. These are optional and not currently used.



Once all parameters are set, press the Submit button to send them back to the NEO from the web browser. The parameters are not updated until they are actually saved to EPROM, (Section 3.9)

NEO-10 Basic Ethernet Setup - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media

Address [http://10.6.99.115/basic\\_ethernet\\_setup.htm](http://10.6.99.115/basic_ethernet_setup.htm) Go

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<a href="#">Basic Ethernet Setup</a>	<a href="#">Multicast Address Setup</a>	<a href="#">Debounce</a>	<a href="#">Echo Packet</a>
<a href="#">Clone From Other Console</a>		<a href="#">PIN Change</a>	<a href="#">Save to EEPROM</a>

Use DHCP Server:

(If using DHCP, below parameters will not be required)

### Basic Ethernet Setup

**IP Address Local Computer IP Addresses**

Unit IP Address:

Subnet Mask:

Gateway Address:

DNS Number 1:

DNS Number 2:

DNS Number 3:

Figure 3 – Basic Ethernet Setup Screen

### 3.4 Multicast Setup

A single multicast address is employed by NEO for the purpose of updating consoles of changes in the Relays and

NEO-10 Multicast Port Number Setup - Microsoft Internet Explorer

Address <http://10.6.99.115/multicast.htm> Go

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**Multicast I/O Broadcast Port Number Setup**

**I/O Update Broadcasts:**    **Multicast Address:**    **Port:**    **Channel Hops:**  
           

Inputs.

Figure 4 - Multicast Port Number Setup

NEO sends out a single packet each time either a Relay is changed by any console or when an input changes due to external event. The Multicast Address is any address in the range of 224.0.0.0 to 239.255.255.254. A specific unicast address can also be used if only a single console is to be utilized. The Port number is a unique port to which the multicast packet will be sent. Channel Hops is the number of routers that the packet will penetrate before being stopped and allowed to propagate no further.

The Multicast Address and Port Number must match those set within the console. It is Okay to use the same Multicast Address and Port number in multiple NEO devices. The base IP address is used to differentiate the source of the I/O update. See the console documentation for more information on setting up NEO relays.

As in the case of all other web pages, the Submit button must be pressed to send the changes to the NEO under configuration.

### 3.5 Debounce Input Settings

The Debounce hyperlink will open the screen below.

NEO-10 Debounce Settings - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media Print Mail Stop

Address [http://10.6.99.115/input\\_debounce.htm](http://10.6.99.115/input_debounce.htm) Go

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[Clone From Other Console](#) [PIN Change](#) [Save to EEPROM](#)

### Input Debounce Settings

**Must be multiples of 20ms**

Input:	Debounce (ms):
1	<input type="text" value="60"/>
2	<input type="text" value="60"/>
3	<input type="text" value="60"/>
4	<input type="text" value="60"/>
5	<input type="text" value="60"/>
6	<input type="text" value="60"/>
7	<input type="text" value="60"/>
8	<input type="text" value="60"/>
9	<input type="text" value="60"/>
10	<input type="text" value="60"/>

Figure 5 - Input Debounce Settings

Each of the 10 inputs can have its own input debounce time. This is the amount of time, in milliseconds, that the input is allowed to stabilize from first change detection to final sampling. The timer resolution is only 20ms, so multiples of 20ms must be used. Other values will work, but give no finer resolution. Once all values have been set, press the Submit button to send the values to the NEO. Save to EEPROM to make them permanent, (Section 3.9).

### 3.6 Echo Packet

The Echo Packet function allows the system to operate on networks that do not support multicast. A typical application might be a number of radios spread throughout a network. Since multicast is not supported, the radio adaptors (IP-223s or C-6200s) are programmed to send packets to a specific static IP address; the IP address of the NEO-10 with Echo Packet enabled.

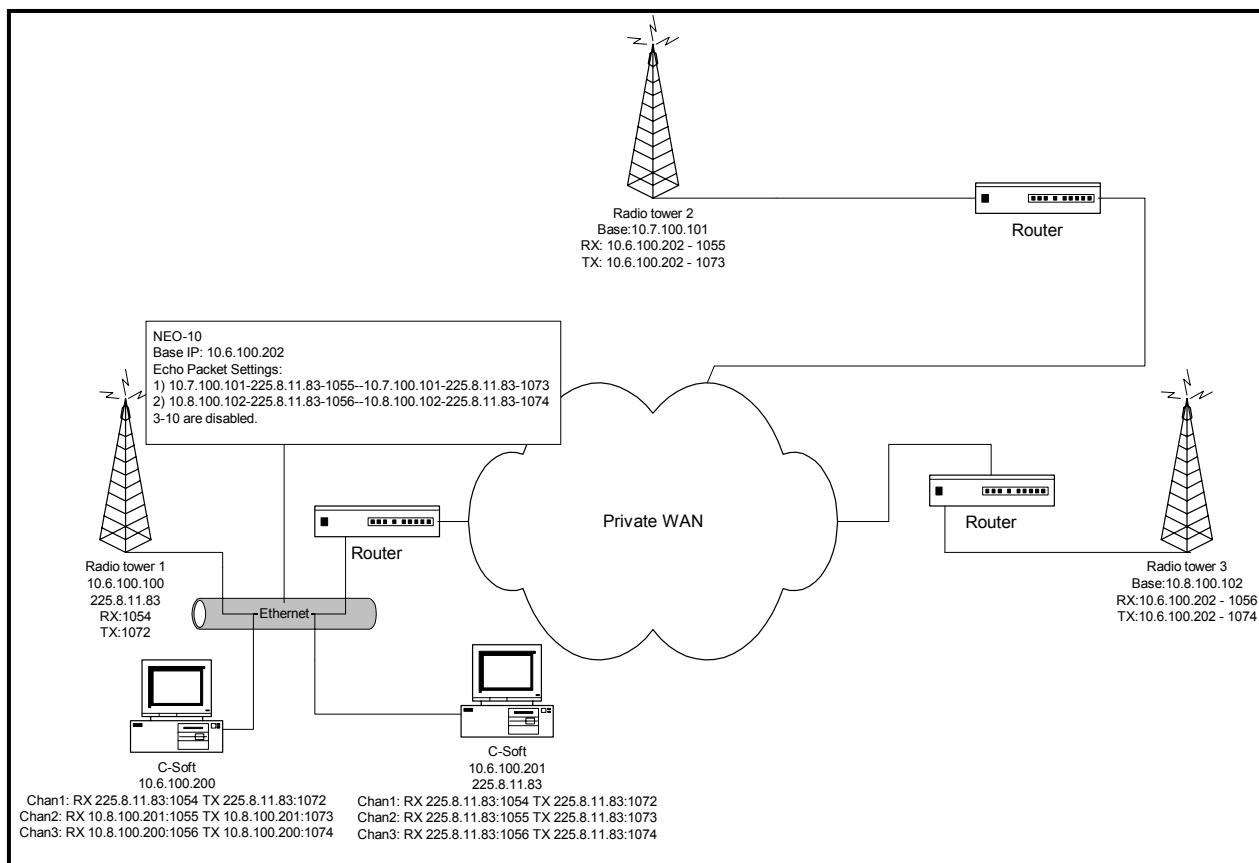


Figure 6-Echo Packet Setup Example

The Example shown in Figure 6 shows a typical usage of the NEO in an echo packet configuration. It shows three radios, two of which are on other subnets. Since multicast is assumed to be blocked, only unicast UDP is available to get audio two and from Radio Towers 2 & 3. The two C-Softs on the 10.6 subnet are able to monitor and control Radio Tower 1 using multicast. However to reach Radios 2&3 the C-Softs send their traffic to the multicast address, which the NEO then translates and sends as unicast to Radio 2 or 3. Receive traffic from Radios 2&3 are sent directly to the NEO which then translates the packets back to multicast so each of the C-Soft consoles can monitor the RX audio. This enables NEO to function as a gateway for other consoles on the same local network segment. The local consoles transmit and receive the multicast address only and NEO translates and sends the packets to the radio directly.

The setup parameters shown for each device on the network are an example only. The parameters of the NEO are delineated by a dash between each value. The values correspond to the entry fields, per line, of the NEO setup screen shown in Figure 7. Note that RX traffic is a single direction copy. Packets received are copied only to the RX MCast address. Note that traffic received to the RX multicast address will be recopied back out. Since there should only be one receive source on the network for a given channel, this should not present a problem. This is depicted by the arrow at the top of the Rx columns. TX traffic is bi-directional. Traffic received as multicast is sent to the unicast address and traffic received as unicast is copied to the multicast address. The ports are still used to delineate channels. Unused ports should not be enabled.

NEO-10 Echo Packet Settings - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://10.6.99.115/echo\_packet.htm

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<a href="#">Clone From Other Console</a>		<a href="#">PIN Change</a>	<a href="#">Save to EEPROM</a>

### Echo Packet Setup

Channel:	Enable:	RX IP: --->>>	RX MCast:	RX Port:	TX IP: <<-->>	TX MCast:	TX Port:	TTL:
1	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1054	0.0.0.0	225.8.11.81	1072	2
2	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1055	0.0.0.0	225.8.11.81	1073	2
3	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1056	0.0.0.0	225.8.11.81	1074	2
4	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1057	0.0.0.0	225.8.11.81	1075	2
5	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1058	0.0.0.0	225.8.11.81	1076	2
6	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1059	0.0.0.0	225.8.11.81	1077	2
7	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1060	0.0.0.0	225.8.11.81	1078	2
8	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1061	0.0.0.0	225.8.11.81	1079	2
9	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1062	0.0.0.0	225.8.11.81	1080	2
10	<input type="checkbox"/>	0.0.0.0	225.8.11.81	1063	0.0.0.0	225.8.11.81	1081	2

Submit

Figure 7 - Echo Packet Setup

### 3.7 Clone From Other NEO

The Clone function allows for the parameters of one NEO to be copied to another over the network. Simply enter the IP address of the unit to copy the parameters from and press the submit button. The parameters will be copied. The only parameters that are not copied are the PIN number, IP address, and Mask.

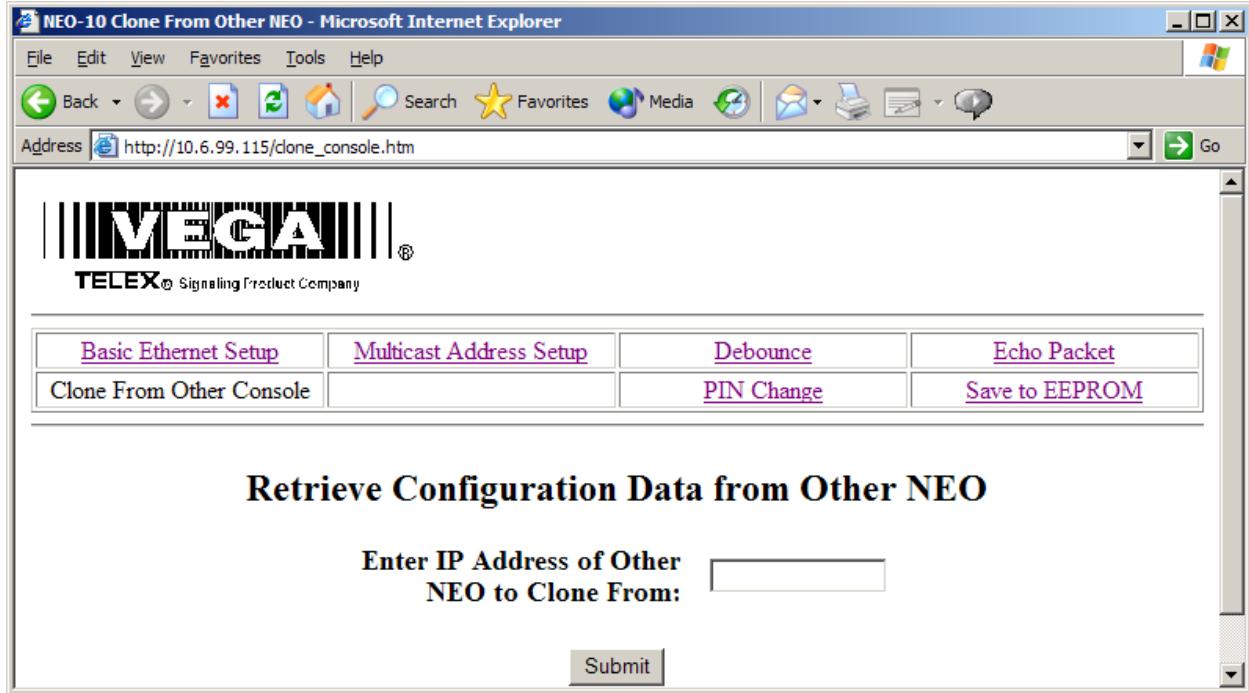
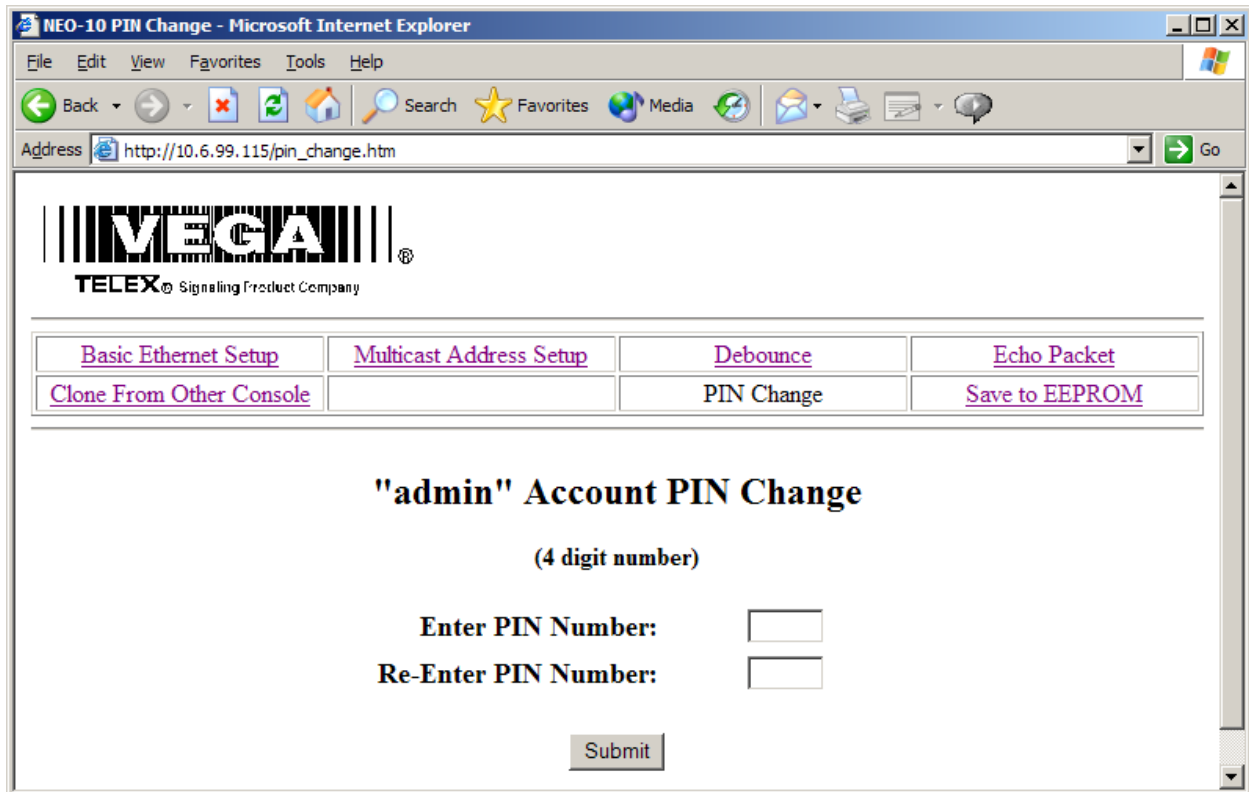


Figure 8 - Clone from Other NEO

### 3.8 PIN Change

The PIN number is the password required to enter the setup mode of the NEO. The default is no PIN number. The PIN number is a 4 digit number that must be entered twice and then submitted.



NEO-10 PIN Change - Microsoft Internet Explorer

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Address [http://10.6.99.115/pin\\_change.htm](http://10.6.99.115/pin_change.htm) Go

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<a href="#">Clone From Other Console</a>		<a href="#">PIN Change</a>	<a href="#">Save to EEPROM</a>

**"admin" Account PIN Change**

(4 digit number)

Enter PIN Number:

Re-Enter PIN Number:

Submit

Figure 9 - Set PIN Number

### 3.9 Save Changes to EEPROM

As each group of settings are changed and submitted, they still must be saved to EEPROM to be stored permanently. Some settings require reboot of the device to take effect. These are primarily IP parameters.

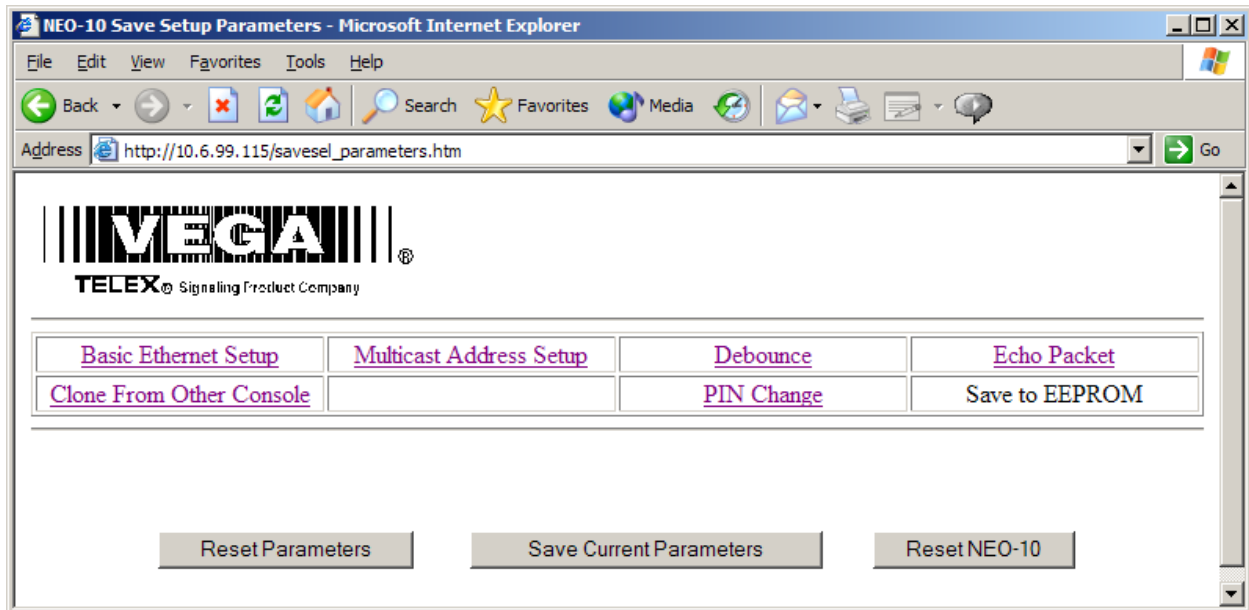


Figure 10 - Save to EEPROM



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APPROVALS:	DR BY: SBC DATE: 09/16/2003	CHK:	APPD:	PROD:	REV LEVEL:	<b>1</b>
TITLE:	<b>PCB ASSY, NEO-10</b>					

REVISIONS				
REV	DESCRIPTION	ECO NO	DATE	APPD
1	PROTOTYPE		09/16/03	

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		DATE: 09/16/2003					
<b>TITLE: PCB ASSY, NEO-10</b>							
1			14	CAP	10uf 16vTANT 3528 B	102877065T	C1 C3 C11 C18 C19 C68 C71 C73 C74 C123 C124 C131 C162 C329
2			15	CAP	0805 0.1UF 25V +/-10%	102881186T	C6 C7 C8 C9 C10 C12 C13 C29 C30 C56 C69 C72 C75 C330 C59
3			1	CAP	1000U,ELECTROLYTIC,LEADED	DO NOT PLACE	C15
4			1	CAP	.001UF 0603 50V +/-10%	102881717T	C150
5			2	CAP	22PF 0603	723482121T	C151 C152
6			4	CAP	1uF 25V 3216 TANT	102877053T	C2 C5 C14 C60
7			1	CAP	1000U,ELECTROLYTIC,LEADED	51821526	C369
8			2	CAP	4.7UF TANT A SIZE	102877067T	C38 C39
9			40	CAP	.1UF 0603	723489101T	C4 C16 C17 C20 C21 C22 C23 C24 C25 C26 C27 C28 C31 C32 C33 C34 C35 C36 C37 C44 C45 C48 C49 C50 C51 C52 C53 C58 C63 C64 C65 C66 C67 C70 C87 C89 C127 C128 C136 C167
10			2	CAP	0805 330PF 50V +/-5%	72341131T	C47 C57
11			2	CAP	0805 47PF 50V +/-5%	72341121T	C54 C55
12			9	CAP	0.01UF 0603 25V +80/-20%	723489100T	C40 C41 C42 C43 C46 C61 C91 C125 C129
13			2	CAP	6PF 0603 50V +/- 5%	102879805T	C62 C137
14			1	CAP	1000PF 500V 1206	723538T	C88
15			1	LED	RED SMT 0805	760532T	D1
16			2	DIODE	SMT 4004 1A DIODE	16016481SMT	D2 D3
17			1	LED	GREEN SMT 0805	7605321T	D4
18			20	DIODE	1N914 DIODE SOT-23	58711000T	D5 D6 D7 D8 D10 D11 D13 D14 D16 D17 D19 D20 D22 D23 D25 D26 D28 D30 D32 D33
19			10	LED	RT ANG. DUAL VERT. LED RED	760506	D9 D12 D15 D18 D21 D24 D27 D29 D31 D34
20			1	FUSE	SMT FUSE WITH HOLDER 5A SLO BLC	7101052T	F44
21			16	FERRITE	0805 FERRITE BEAD	723511T	FB1 FB2 FB3 FB4 FB5 FB6 FB7 FB8 FB9 FB10 FB11 FB12 FB13 FB14 FB22 FB23
22			1	FERRITE	COMMON MODE FB	724039T	FB44
23			1	CONN	EMULATION HEADER	640125	J1
24			1	CONN	20 PIN SURFACE MOUNT HEADER	DO NOT PLACE	J12
25			1	CONN	CN-3PIN WEILAND	2862050	J2
26			10	CONN	RJ-45 8 PIN RECEPT	2862013	J3 J5 J6 J7 J8 J10 J11 J13 J14 J15
27			1	CONN	SHIELDED RJ-45 ETHERNET w/ LEDs	640157	J4
28			1	CONN	RTDB9	640149	J9
29			10	RELAY	DPDT THU HOLE	1800329	K1 K2 K3 K4 K5 K6 K7 K8 K9 K17
30			20	TRANSISTOR	MMBT3904 SOT-23	54671200T	Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20
31			7	RES	0 OHM 0805 5%	102506000T	R1 R2 R133 R143 R144 R145 R146
32			4	RES	75 OHM 0603 1%	723481084T	R102 R104 R114 R115
33			1	RES	4.64K 0805 1%	102515264T	R11
34			1	RES	53.6K 0805	102515370T	R12
35			1	RES	3.01K 0805 1%	102515246T	R140
36			1	RES	301 1% 0603	723481146T	R141

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APPROVALS:		DR BY: SBC	CHK:	APPD:	PROD:	REV LEVEL:	<b>1</b>
		DATE: 09/16/2003					
<b>TITLE: PCB ASSY, NEO-10</b>							
37			10	RES	2.4K 0603	723488242T	R23 R24 R25 R26 R150 R181 R196 R371 R372 R373
38			4	RES	0 OHM 0603	DO NOT PLACE	R16 R43 R53 R54
39			2	RES	15 OHMS 0603	723488150T	R162 R27
40			9	RES	10K 0603	723488103T	R17 R18 R32 R77 R78 R79 R15 R138 R6
41			2	RES	0603 OPTIONAL	DO NOT PLACE	R180 R195
42			1	RES	1.5K 0603 5%	723488152T	R197
43			2	RES	0805 6.98k 1%	102515281T	R29 R131
44			5	RES	0 OHM 0603	723488000T	R3 R4 R5 R139 R166
45			32	RES	0805 10K 100V 1%	102515300T	R30 R31 R33 R60 R61 R70 R71 R72 R80 R81 R83 R86 R88 R89 R93 R94 R98 R101 R103 R105 R108 R109 R110 R113 R118 R119 R124 R125 R126 R130 R388 R389
46			30	RES	0603 1k 5%	723488102T	R7 R8 R9 R10 R14 R28 R34 R36 R62 R69 R73 R74 R84 R85 R90 R91 R99 R100 R106 R107 R111 R112 R122 R123 R127 R128 R129 R134 R136 R137
47			15	RES	47 OHMS 0805 5%	102506470T	R35 R37 R38 R40 R41 R42 R44 R45 R46 R47 R48 R50 R51 R52 R57
48			4	RES	0805 1k 1%	102515200T	R39 R132 R135 R142
49			1	RES	22.1K 0603 1%	723481333T	R49
50			2	RES	220 OHMS 0805 5%	102506221T	R55 R56
51			2	RES	470 OHMS 0603	723488471T	R59 R58
52			1	RES	4.7K 0603	723488472T	R63
53			2	RES	30.1K 1% 0603	723481346T	R75 R13
54			1	RES	33.2K 1% 0603	723481350T	R76
55			1	RES	2.2M 0805 5%	102506225T	R82
56			8	RES	0805 OPTIONAL	DO NOT PLACE	R87 R96 R97 R116 R117 R120 R121 R147
57			26	RES	56 OHMS 0603 1%	723481072T	R92 R95 R157 R158 R159 R160 R161 R182 R183 R186 R188 R189 R190 R191 R192 R193 R194
58			1	SWITCH	SMT TACT SWITCH	700182T	S1
59			1	XFMR	PE-68515L 10/100 ETHERNET XFMR	730154S	T3
60			1	IC	NET+50	760342	U1
61			1	IC	TC7S86FU	760343S	U12
62			1	IC	512Kx16 FLASH ATMEL/AMD	7603444PS	U13
63			2	IC	SN74LVC541ADWR SMT	760256T	U14 U18
64			2	IC	MT48LC4M16A2-75 4Mx16 SDRAM	760501S	U16 U17
65			1	IC	74HC00 QUAD NAND	17-03-051986T	U19
66			2	IC	LT1086CM-33 3.3V REGULATOR	511155000S	U2 U28
67			1	IC	MAX3232CSE S016	760349S	U20
68			2	IC	SN74LVC574ADW SMT	760257T	U22 U23
69			1	IC SOCKET	PLCC SOCKET 44	539030044	FOR U24
70	X		1	IC	7032 NEO	76026718PS	U24
71			1	IC	SN74LVC541ADWR SMT	DO NOT PLACE	U25
72			2	IC	74LCX245 Bi-Directional 8bit Bus Chip	DO NOT PLACE	U26
73			4	IC	LM317 ADJ REGULATOR, SMT	760250T	U3 U4 U27 U29

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		Lincoln, Nebraska USA				
APPROVALS:	DR BY: SBC DATE: 09/16/2003	CHK:	APPD:	PROD:	REV LEVEL:	<b>1</b>
TITLE:		<b>PCB ASSY, NEO-10</b>				
ITEM	NEW	QTY	TYPE	DESCRIPTION	PART NO.	DESIGNATOR
74		1	IC	Intel LXT791ALC	760533	U49
75		5	IC	74LCX245 Bi-Directional 8bit Bus Chip	760255	U5 U9 U10 U11 U15
76		1	IC	TC7S32FU	760503S	U6
77		2	IC	TC7S08FU	760504S	U7 U21
78		1	IC	TPS70102PWP	760505S	U8
79		1	XTAL	44.2368MHz 3.3V OSC	780191S	Y1
80		1	XTAL	25.000MHZ SMT	780189S	Y5
81	X	1	PCB	PRINTED CIRCUIT BOARD	750679	
82		1	PASTE	SOLDERPASTE	BE738	
83	X	1	REF	SCHEMATIC	770865	

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Telex Communications Inc.  
Lincoln, Nebraska USA

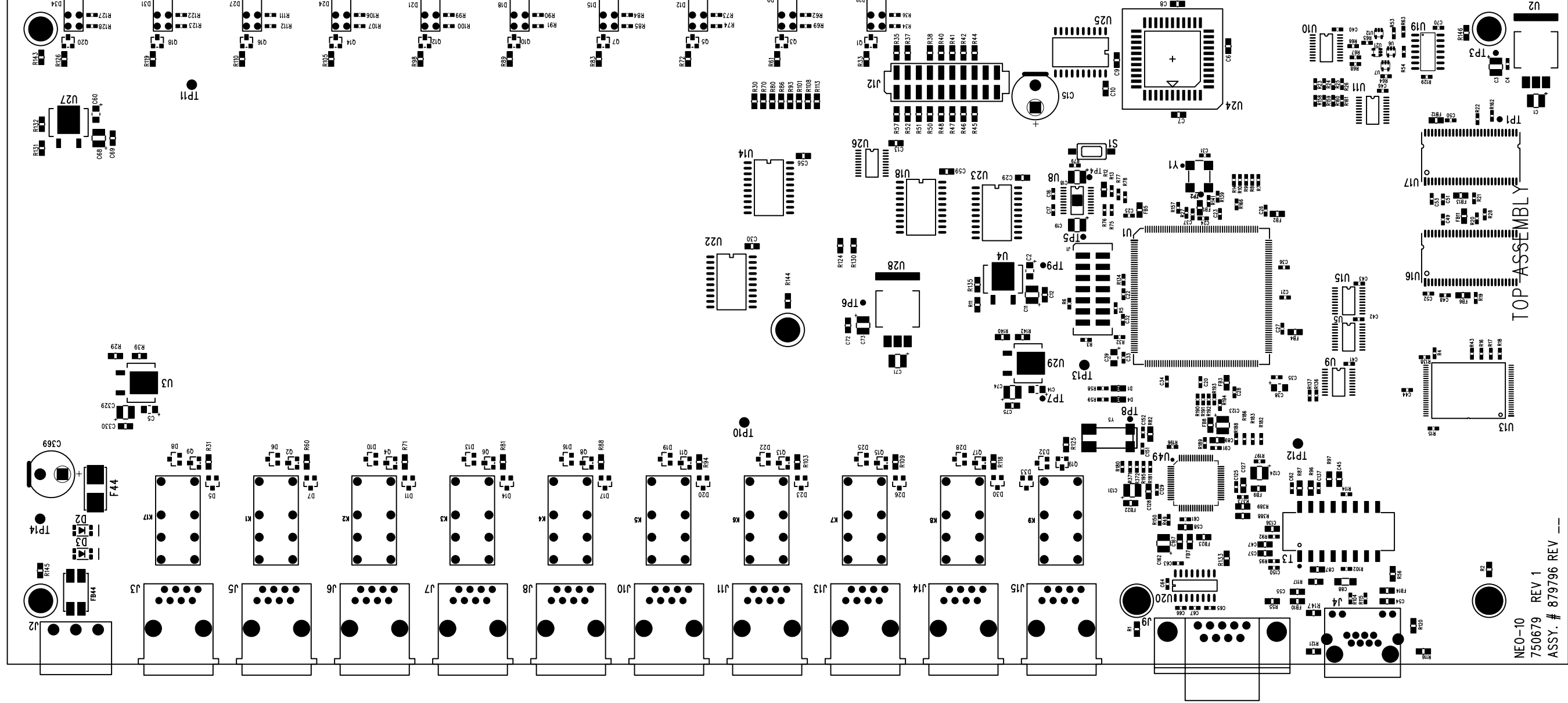
PART NO:  
879796

APPROVALS  
DR BY: SBC  
DATE: 09/16/2003

CHK:  
APPD:

PROD:  
REV LEVEL: 1

TITLE  
PCB ASSY, NEO-10

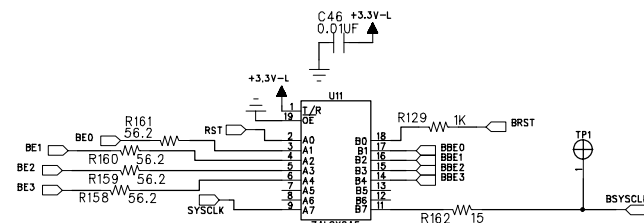
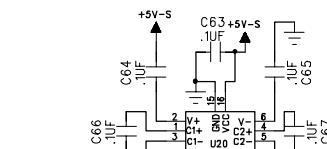
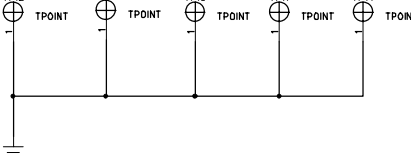
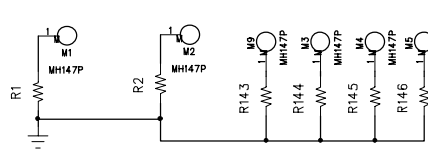


TOP ASSEMBLY YERAYER  
750679 REV 1  
NEO-10  
750679 REV 1  
ASSY. # 879796 REV --

BE, LN

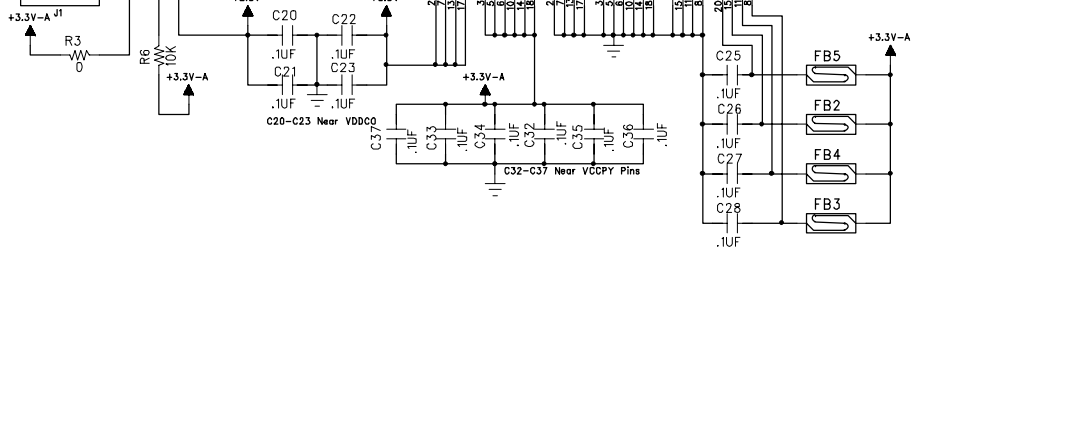
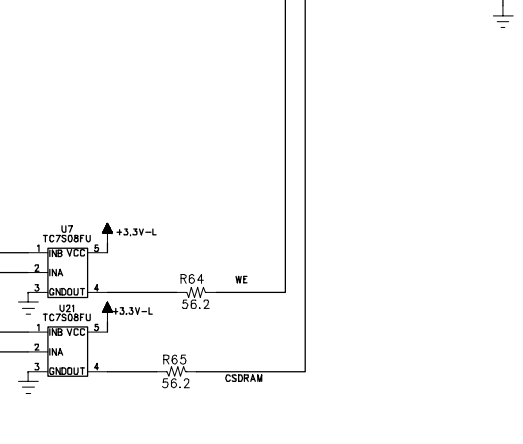
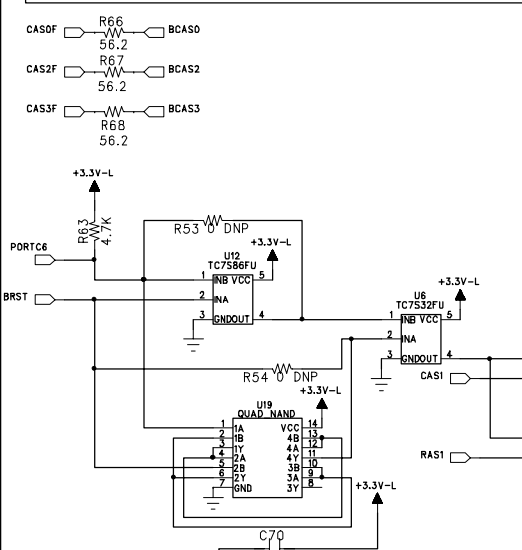
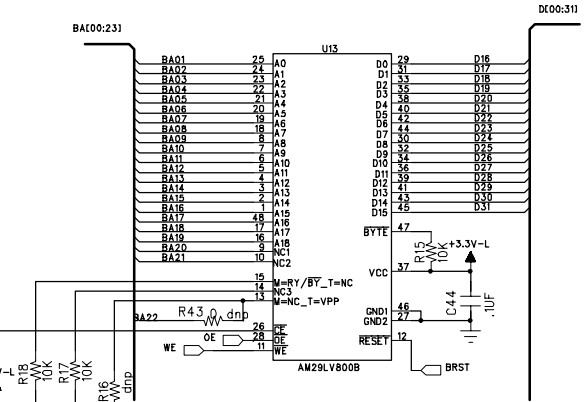
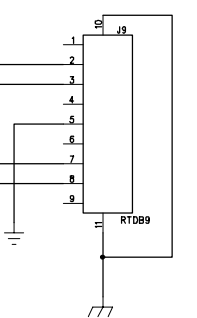
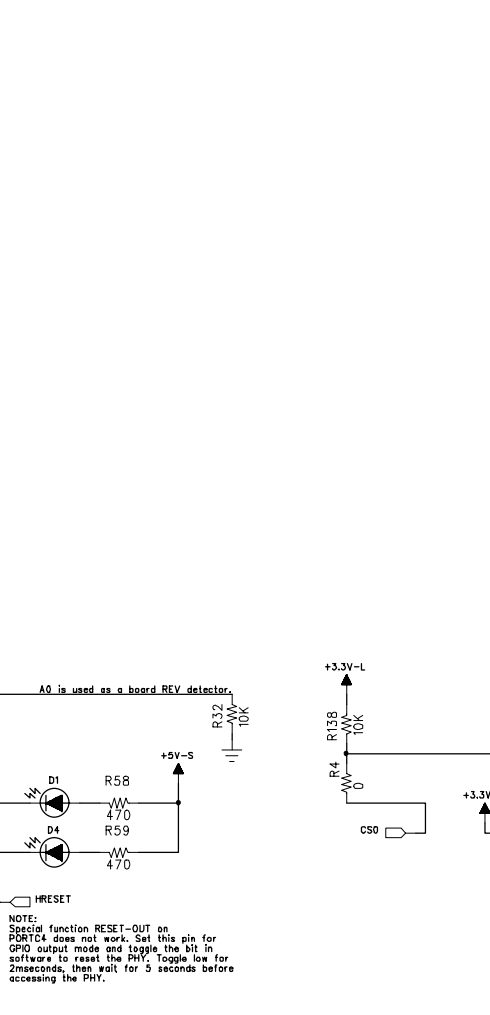
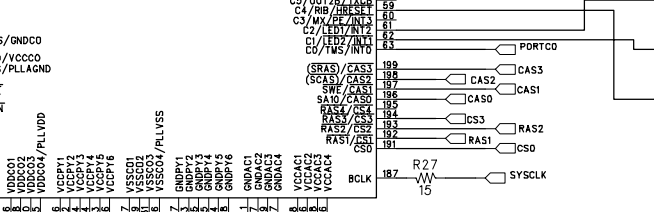
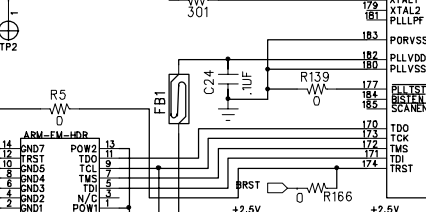
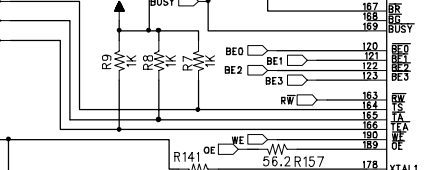
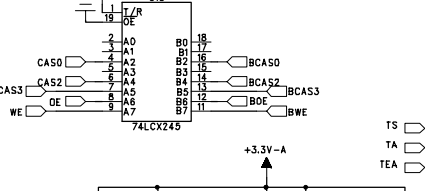
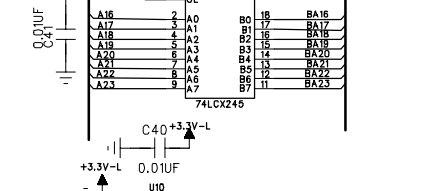
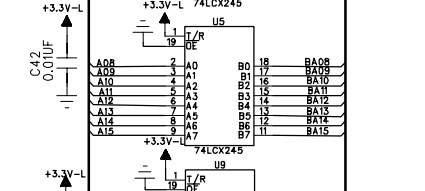
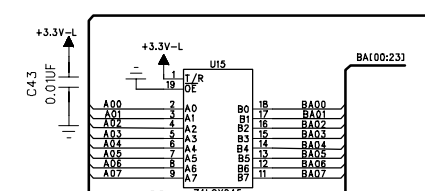
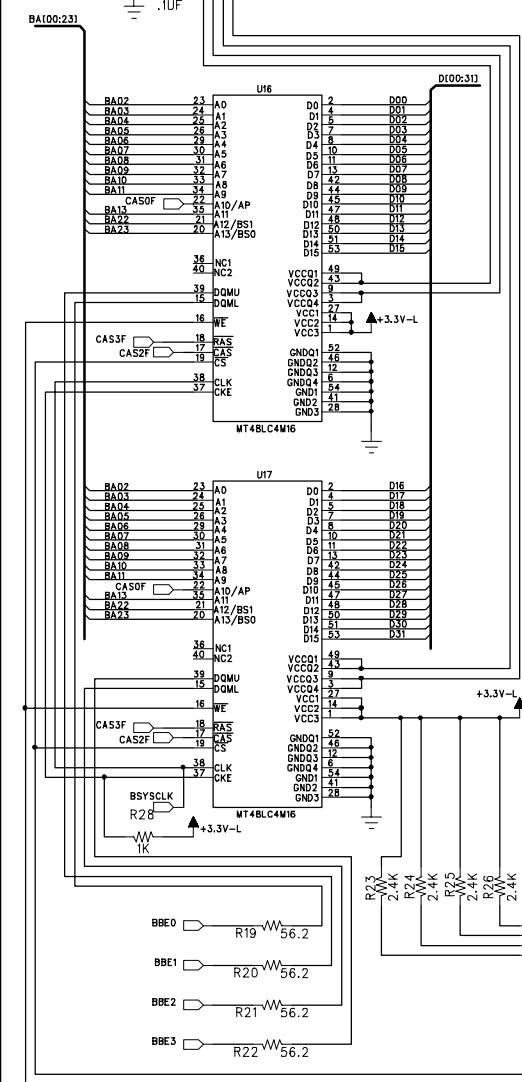
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CHG NO	LTR	DESCRIPTION	DATE	APPD
	1	PROTO	09/17/03	



NETA40 versus NETA50 option resistors

CIRCUIT	PLACE	NETA40	DO_NOT_PLACE	NETA50	DO_NOT_PLACE
		R163		R165,R162	
SYSCLK	R163				
ICE RESET	R166	R5		R5	R166



A0 is used as a board REV detector

NOTE: Special function RESET-OUT on PORTC4 does not work. Set this pin for GPIO output mode and toggle the bit in software to reset the Phif. Toggle low for 2msecps, then pull for 3 seconds before accessing the PHY.

# PRELIMINARY PRINT

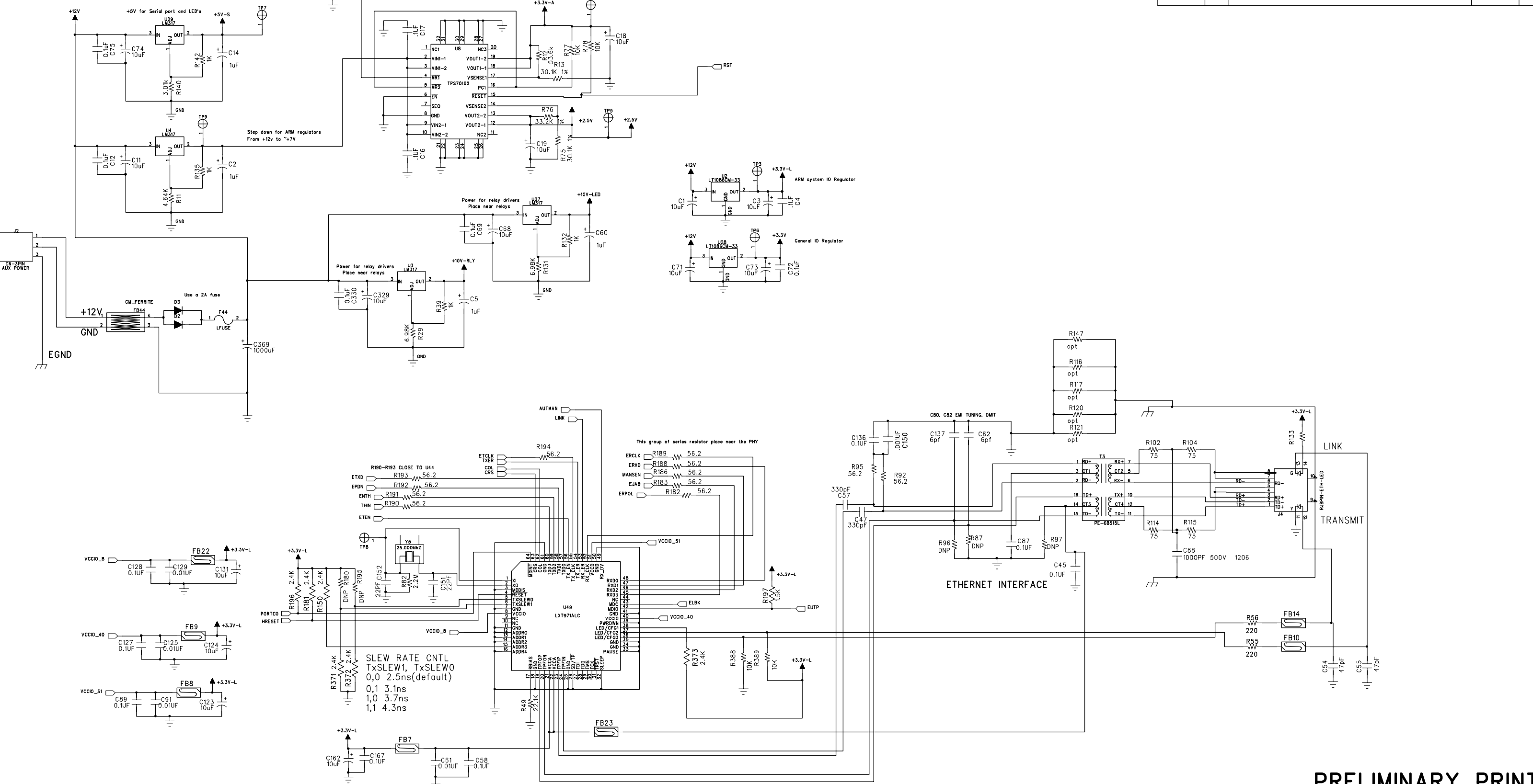
COMPANY: **Telex**  
 TELEX COMMUNICATIONS INC.  
 Lincoln, Nebraska U.S.A.

TITLE: **VEGA**  
**NEO-10 Schematic**

CODE: SIZE: DRAWING NO: REV:  
 D 770865

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REVISIONS				
CHG NO	LTR	DESCRIPTION	DATE	APPD



PRELIMINARY PRINT

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TELEX COMMUNICATIONS INC.  
Lincoln, Nebraska U.S.A.

DRAWN: SBC  
 CHECKED:  
 APPD:  
 PROD:

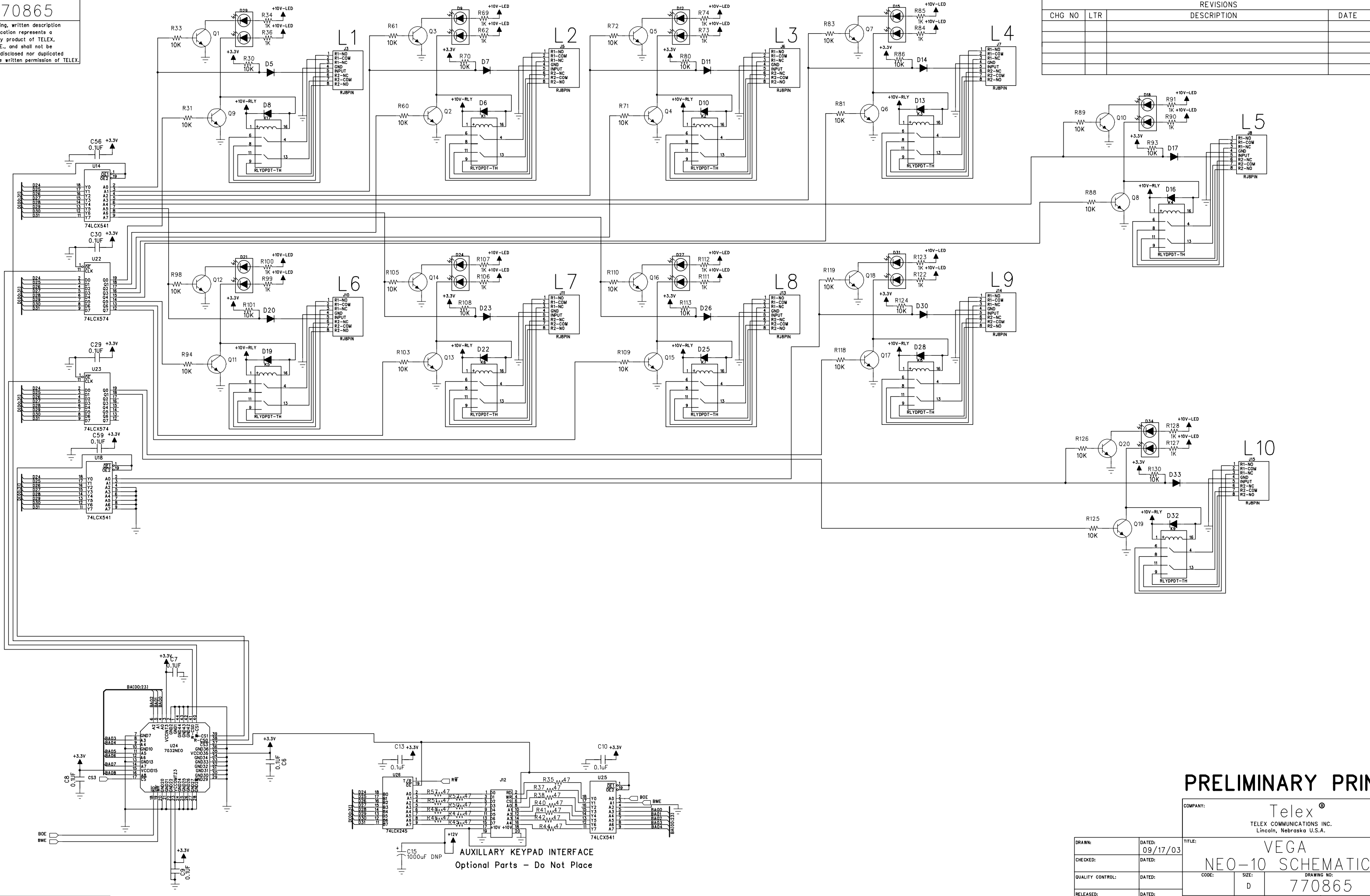
DATE: 09/17/03  
 TITLE: VEGA  
 NEO-10 Schematic

CODE: D  
 SIZE: 770865  
 DRAWING NO: 770865  
 REV: 1  
 SCALE: SHEET: 2 OF 3



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CHG NO		LTR		DESCRIPTION	DATE	APPD



# PRELIMINARY PRINT

COMPANY: Telex®  
 TELEX COMMUNICATIONS INC.  
 Lincoln, Nebraska U.S.A.

TITLE: VEGA  
 NEO-10 SCHEMATIC

DRAWN:	DATED:	09/17/03
CHECKED:	DATED:	
QUALITY CONTROL:	DATED:	
RELEASED:	DATED:	

CODE:	SIZE:	DRAWING NO:	REV:
	D	770865	
SCALE:	SHEET: 3 OF 3		

AUXILLARY KEYPAD INTERFACE  
 Optional Parts - Do Not Place

## 5 Warranty, Service, Repair, and Comments

**Important! Be sure the exact return address and a description of the problem or work to be done are enclosed with your equipment.**

### Warranty (Limited)

All Telex Manufactured Vega signaling products are guaranteed against malfunction due to defects in materials and workmanship for three years, beginning at the date of original purchase. If such a malfunction occurs, the product will be repaired or replaced (at our option) without charge during the three-year period, if delivered to the Telex factory. Warranty does not extend to damage due to improper repairs, finish or appearance items, or malfunction due to abuse or operation under other than the specified conditions, nor does it extend to incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives the customer specific legal rights, and there may be other rights which vary from state to state.

Factory Service Center

### **TELEX Communications, Inc.**

#### **Vega Signaling Products**

8601 East Cornhusker Highway, Lincoln, Nebraska, 68507  
Phone: (402) 465-7026 / (800) 752-7560 Fax: (402) 467-3279  
E-mail: [vega@telex.com](mailto:vega@telex.com), Web: [www.vega-signaling.com](http://www.vega-signaling.com)

### Claims

No liability will be accepted for damages directly or indirectly arising from the use of our materials or from any other causes. Our liability shall be expressly limited to replacement or repair of defective materials.

### Suggestions or Comments

We'd appreciate your input. Please send us your suggestions or comments concerning this manual, by fax (402-467-3279) or e-mail them to: [vega@telex.com](mailto:vega@telex.com)

Visit our web site at [www.vega-signaling.com](http://www.vega-signaling.com)